REMARKS

Applicants wish to thank the Examiner for the attention accorded to the instant application, and respectfully request reconsideration of the application as amended.

Formal Matters

Applicants request that this amendment submitted under 37 CFR § 1.114 along with a Request for Continued Examination (RCE) be entered and the examination of the application be continued.

Claims 1, 2, 4, 5, 7-10, 12, 13, 15, 16 and 18-21 are currently pending in the Application, with claims 1, 4, 8, 12, 15 and 19 being independent claims. By this amendment, claims 1, 4, 8, 12, 15 and 19 are amended to recite that the sentence structure "represents a dependency among words", and that "the parallel modification is structure modification carrying out the change in connection of the branches so that connecting relationships of the branches in the sentence structure are equal to each other for all of nodes corresponding to the words put in a parallel relationship in the sentence structure". Support for this amendment can be found in the specification on page 2, lines 10-12, page 24, lines 12-15, and in Figs. 16A-16C and Fig. 18. Care has been taken to ensure no new matter is being entered.

Rejection of Claims Under 35 U.S.C. §103

Claims 1, 2, 4, 5, 7-10, 12, 13, 15, 16 and 18-21 are rejected under 35 U.S.C. § 103(a) as unpatentable over Akers et al., U.S. Patent No. 6,278,967 (hereinafter "Akers") in view of Kumai, U.S. Patent Application Publication No. 2004/0260979. These rejections should be withdrawn based on the comments and remarks herein.

Claims 1 and 12, as amended herein, recite a text mining apparatus comprises means for generating a sentence structure from an input document, means for generating a similar structure of patterns having a similar meaning of a partial structure of the sentence structure by performing

predetermined conversion operation, including at least change in connection of branches in a graph structure, of the partial structure, and means for determining the patterns having the similar meaning as the identical pattern and detecting the pattern. The sentence structure represents a dependency among words (see, Figs. 16A-16C and page 2, lines 10-12 of the specification). The means for generating the similar structure comprises means for performing parallel modification (Fig. 18) of sentence structure, means for generating a partial structure (see, Fig. 19) of the sentence structure, means for performing non-directional branching (Figs. 20A-20E) of a directional branch of the sentence structure and/or partial structure, means for replacing a synonym (Fig. 22) in the sentence structure and/or partial structure by referring to a synonym dictionary, and means for performing non-ordering (Fig. 22) of ordering trees of the sentence structure and/or partial structure. The parallel modification is structure modification carrying out the change in connection of the branches so that connecting relationships of the branches in the sentence structure are equal to each other for all of nodes corresponding to the words put in a parallel relationship in the sentence structure (page 24, lines 12-15, and Fig. 18). The means for generating the similar structure uses the similar structure as an equivalent class of the partial structure of the sentence structure.

Claims 4, 8, 15 and 19 are similarly amended to recite means, such as a similar-structure generating unit, that perform parallel modification as recited in claim 1.

Kumai may disclose, in paragraph [0062] and Fig. 5, an example of a screen display of a resemblance sentence retrieving tool for retrieving a sentence which is resembled to a designated sentence. Kumai merely discloses the resemblance sentence retrieving tool that can acquire a list of sentences resembled to one designated sentence. In addition, Kumai also discloses "employing a synonym dictionary", "extracting a featured word contained in a designated sentence", and "providing in a top priority documents having similar featured words to the

extracted featured word."

Accordingly, Kumai may disclose elements corresponding to "an input document" and "patterns having a similar meaning" as recited in amended claims 1, 4, 8, 12, 15, and 19 but Kumai does not disclose other components recited in these amended claims. Furthermore, Kumai neither teaches nor suggests a particular technique regarding how to retrieve (prepare) the "resemblance sentence" from the "designated sentence." More specifically, Kumai neither teaches nor suggests "a sentence structure representing a dependency among words", "a similar structure", " a partial structure", and "predetermined conversion operation, including at least change in connection of branches in a graph structure" as recited in amended Claims 1, 4, 8, 12, 15, and 19.

In other words, Kumai neither teaches nor suggests "means for generating a sentence structure from an input document, the sentence structure representing a dependency among words", "means for generating a similar structure of patterns having a similar meaning of a partial structure of the sentence structure by performing predetermined conversion operation", and "means for determining the patterns having the similar meaning as the identical pattern and detecting the pattern."

In addition, Kumai neither teaches nor suggests "means for performing parallel modification of the sentence structure" with "the parallel modification being structure modification carrying out the change in connection of the branches so that connecting relationships of the branches in the sentence structure are equal to each other for all of nodes corresponding to the words put in a parallel relationship in the sentence structure."

In the Office Action, the Examiner interprets the parallel modification as modifying a connecting relationship between two sentences' elements, and contends that Kumai, like the present invention, modifies a connection relationship between two sentences' elements by

considering Fig. 5 of Kumai in view of Figs. 15 and 17 of the present invention. This contention is not correct.

First and foremost, Fig. 15 of the present invention is a diagram showing an example of a text set in a text DB used in first to third examples of the present invention, and Fig. 17 of the present invention is a diagram showing the structure of a synonym dictionary used in the first to third examples of the present invention (see, page 12, lines 9-10 and 17-18 of the specification). That is, Figs. 15 and 17 of the present invention do not show the parallel modification. Instead, the parallel modification is shown in Fig. 18 of the present invention (see, page 24, lines 12-15).

Second, Fig. 5 of Kumai merely shows a resembled sentence retrieving tool displaying a retrieve result provided by retrieving synonym sentences having implication similar to such a sentence that "when a fuse of an iron is cut out, how to replace this melted fuse by new fuse." (paragraph [0062], emphasis added). In other words, Fig. 5 shows retrieving a sentence which is resembled to a designated sentence and does not teach or suggest modifying a connection relationship. Moreover, as the Examiner acknowledges, Kumai does not teach or suggest including at least change in connection of branches in a graph structure, of the partial structure (Office Action, page 8), so that Kumai does not teach or suggest parallel modification being structure modification carrying out the change in connection of the branches so that connecting relationships of the branches in the sentence structure are equal to each other for all of nodes corresponding to the words put in a parallel relationship in the sentence structure, as recited in the independent claims of the present application.

In the Office Action, the Examiner further concedes that Kumai fails to teach means for performing non-directional branching of a directional branch of the sentence structure and/or partial structure and means for performing non-ordering trees of the sentence structure and/or partial structure (Office Action, pages 9-10). However, the Examiner asserts that Akers teaches

these features.

Akers discloses an automated natural language translation system which can translate from a source natural language to a target natural language. The translation engine includes a preparer, a parser, a graph maker, an evaluator, a graph scorer, a parse extractor, and a structural converter. The preparer examines the input text and resolves any ambiguities in input sentence boundaries. The preparer then creates and displays the input text in a parse chart to obtain possible syntactic categories for the input text. The graph maker produces a graph of the possible syntactic interpretations of the input text based on the parse chart. The graph includes nodes and subnodes which are associated with possible interpretations of the input text. The evaluator, which comprises a series of experts, evaluates the graph of the possible interpretations and adds expert weights to nodes and subnodes of the graph. The graph scorer uses the expert weights to score the subnodes, and the graph scorer then associates the N best scores with each node. The parse extractor assigns a parse tree structure to the preferred interpretation as determined by the graph scorer. The structural converter performs a structural conversion operation on the parse tree structure to obtain a translation in the target language (col. 4, line 41 to col. 5, line 3, emphasis added).

Akers also discloses, in col. 8, lines 6-26, that "the order in which nodes are visited and scored is a standard depth-first graph-walking algorithm."

Furthermore, Akers discloses, in col. 8, line 66 to col. 9, line 46, that the structural converter may comprise a grammar rule controlled structural converter 36, a lexicon controlled structural converter 38, and a synthesis rule controlled structural converter 40. The preparser 24 first performs a preparsing operation (step 102) on the source text 23. This operation includes the resolution of ambiguities in sentence boundaries in the source text, and results in a parse chart seeded with dictionary entries 25. The parser 26 then parses the chart produced by the

preparser (step 104), to obtain a parse chart filled with syntactic possibilities 27. The graph maker 28 produces a graph of possible interpretations 29 (step 106), based on the parse chart resulting from the parsing step. The evaluator 30, which accesses a series of experts 43, evaluates the graph of stored interpretations (step 108), and adds expert weights to the graph 31. The graph scorer 33 scores nodes and associates the N (e.g., 20) best scores with each of them 35. The parse extractor 32 assigns a parse tree structure 39 to this preferred interpretation (step 110). The structural converter 34, which accesses the conversion tables 58, then performs a structural conversion operation (step 112) on the tree to obtain a translation 41 in the target language.

In Akers, "a graph of the syntactic interpretations" defines a graph representing relevant order of a syntax generation rule. In addition, "a structural conversion operation" in Akers carries out a changing of the syntax generation rule in "a graph of generation rule" corresponding to a phrase or a section to carry out the changing of the phrase so that no contradiction arises on a sense and a syntax in the sentence.

In contradistinction to this, "the sentence structure" of the present invention represents a dependency among words. Accordingly, the graph of the syntactic interpretation in Akers is not corresponding to, but is quite different from, the sentence structure of the present invention.

In addition, "the predetermined conversion operation" of the present invention includes at least change in connection of branches in a graph structure to generate the graph structure having the same sense from which a syntactic role may differ. Therefore, the structural conversion operation in Akers does not correspond to the predetermined conversion operation in the present invention.

Accordingly, Akers also neither teaches nor suggests "a partial structure" and "a similar structure" as well as "a sentence structure representing a dependency among words" and

"predetermined conversion operation, including at least change in connection of branches in a graph structure" as recited in the amended independent claims 1, 4, 8, 12, 15 and 19.

In other words, Akers neither teaches nor suggests "means for generating a sentence structure from an input document, the sentence structure representing a dependency among words", "means for generating a similar structure of patterns having a similar meaning of a partial structure of the sentence structure by performing predetermined conversion operation", and "means for determining the patterns having the similar meaning as the identical pattern and detecting the pattern."

Akers discloses, in col. 11, lines 11-32 and Fig. 9, a sample graph used by the system of Fig. 1 for the exemplary phrase "by the bank". The graph includes nodes 80 and their subnodes 82, 84, 86 linked by pointers 88, 89, 90, 91 in a manner that indicates various types of relationships. In addition, Akers discloses substructure specified in col. 16, lines 20-29. However, Akers does not teach or suggest changing connection of branches. Instead, Akers assigns a parse tree structure to a preferred interpretation (column 9, lines 40-41); the entire parse tree structure is assigned and there is no mechanism to change the connection of branches.

Accordingly, inasmuch as Akers neither teaches nor suggests the "predetermined conversion operation, including at least change in connection of branches in a graph structure" as recited in amended Claims 1, 4, 8, 12, 15 and 19 in the manner described above, as a matter of course, Akers neither discloses nor teaches "means for performing parallel modification of the sentence structure" with "the parallel modification being structure modification carrying out the change in connection of the branches so that connecting relationships of the branches in the sentence structure are equal to each other for all of nodes corresponding to the words put in a parallel relationship in the sentence structure."

It has been held by the courts that to establish *prima facie* obviousness of a claimed

invention, all the claim limitations must be taught or suggested by the prior art. See, *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). As illustrated above, the hypothetical combination of Akers and Kumai does not teach or suggest either predetermined conversion operation, including at least change in connection of branches in a graph structure, or parallel modification being structure modification carrying out the change in connection of the branches so that connecting relationships of the branches in the sentence structure are equal to each other for all of nodes corresponding to the words put in a parallel relationship in the sentence structure, so that *prima facie* obviousness has not been established. Consequently, independent claims 1, 4, 8, 12, 15 and 19 patentably distinguish over the art of record in the application. Claim 2 is dependent from Claim 1, Claims 5, 7 are dependent from Claim 4, Claims 9-10 are dependent from Claim 8, Claim 13 is depended from Claim 12, Claim 16 and 18 are depended from Claim 15, and Claims 20-21 are dependent from Claim 19. Therefore, dependent Claims 2, 5, 7, 9-10, 13, 16, 18, 20 and 21 patentably distinguish over the art of record in the application for at least the reasons that their base claims patentably distinguish over the art of record in the application.

Hence, withdrawal of this rejection is respectfully requested.

Conclusion

For the reasons set out above, Applicants respectfully submit that the application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are respectfully requested. Should the Examiner believe that anything further is needed to place the application in even better condition for allowance, the Examiner is requested to contact the undersigned representative at the telephone number below.

Respectfully submitted,

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